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(54) Inking means for a printing machine

(57) Inking means for a printing machine comprises a wedge-shaped ink-well (1) adjoining an ink ductor roller. A plate (9) fastened at the base of the ink-well (1) is provided, perpendicularly to the roller axis, with a groove (10) in which a partition (2) bears at and only at the upper end of the groove base (12) so as to be displaceable therealong. The partition (2) is guided at both sides by respective ductor blades (15, 16) and has a bearing surface (4), which corresponds to the radius of the ink ductor roller (3) and narrows in wedge shape at its upper end (14). The bearing surface (4) bears, under the force of a spring (5), against the roller circumference and is provided with a groove-shaped recess (13) starting at its lower end and ending shortly before its narrowed portion (14).

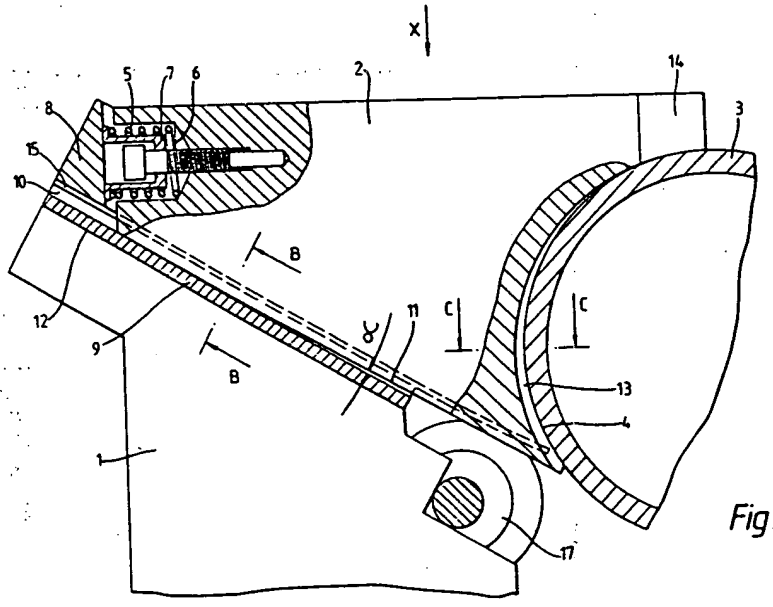

Fig.1.

SPECIFICATION

Inking means for a printing machine

The present invention relates to inking means for a printing machine, especially an exchangeable partition for a wedge-shaped ink-well arranged at an ink ductor roller of rotary printing machines in which the plate cylinder carries two or more printing plates one beside the other.

Exchangeable partitions, also called ink-well dividers or dividing wedges, for dividing ink-wells into individual compartments for different inks, are known in a variety of forms.

Thus, for example, it is proposed in GB-PS 646 066 to provide the bearing surfaces of an appropriately constructed partition, which surfaces are disposed at an ink-well wall and an ink ductor roller, with resilient material strips which with the support of several setting devices provided within the partition effect an ink-tight bearing of the partition against the wall and the roller.

In another arrangement, disclosed in GB-PS 924 401, it is proposed to seal off the bearing surfaces by a tubular elastic material device which is expansible with the aid of auxiliary pressure means.

Both proposals have the disadvantage that differently coloured ink films, which in a printing operation are taken up by the ink ductor roller from the respective ink-well compartments and which are separated each from the other by the partition thickness, tend to approach each other during running of the ductor roller and cannot be kept separated by the partition to their original spacing. A build-up of ink, which increases with increasing speed and leads to intermixing of the two colours, forms at the partition so that the print quality in the edge zone of the printing plates is reduced due to colour intermixing. At the same time, proportions of the intermixed inks can be conveyed back into the respective compartments of the ink-well and adversely affect the colour purity.

A further disadvantage is brought about by the partition which is immovably fastened in the ink-well and generally makes setting of the ink-well relative to the ink ductor roller more difficult. It is also not possible to arrange the partition against the circumference of the ductor roller in such a way as to compensate for errors in the circularity of the roller, so that irregularities in the circularity act on the sealing material thereagainst in the manner of a cam and alternately compress and relieve the material.

Additionally, the sealing material can become encrusted with ink and dirt which, aided by the dynamic loading of the ink ductor roller, get between the roller circumference and the sealing material, so that rem val and re-installation of the partition and xchange of the sealing material must b carried out to avoid leakages. A ductor blade, arranged along the ink-well on the base ther of, acts disadvantageously in conjunction with the partition installed on the base. This arrangement hinders adjustment of the ductor blade and may even make such adjustment impossible, because the partition rests on th ductor blade and is usually displaced with the ductor blade thereby to become leaky.

In DE-Gbm 1 877 038 it is proposed to glue at the location at which the partition lies against the roller circumference a cellulose strip which has the form of a sleeve and is covered by the partition. This arrangement, apart from the already mentioned problems associated with the other arrangements, has the additional disadvantage that the gluing of the strip requires additional effort and its life is relatively limited, especially in the case of use of inks which contain solvents. Moreover, ink gap resetting with the aid of a ductor blade adjustable zone by zone is not provided.

It would thus be desirable to provide a partition for a wedge-shaped ink-well which is relatively easy to manufacture, requires reduced maintenance, and has good functional reliability.

According to the present invention there is provided inking means for a printing machine, comprising an ink ductor roller, an ink well which adjoins the roller and the base of which slopes down towards the roller and is provided with a channel extending in a direction perpendicular to the roller axis, a movable well partition member arranged in the channel to be in sliding contact with the base of the channel at and only at an upper end thereof and provided with a curved bearing surface corresponding in curvature to and resiliently urged against the roller circumference, and a respective ductor blade guiding the partition member at each of two opposite sides thereof, the curved bearing surface having an upper end portion narrowing in wedge shape and a recess extending from a lower end of the surface to a region adjacent to said upper end portion.

In a preferred embodiment, the partition m mber is so arranged that it bears merely at the upp r end of a groove or channel which is provided perp ndicularly to the axis of the ink ductor roller in a bas plate fastened to the bottom of the ink-well, wherein a bearing surface, which corresponds to the radius of the ink ductor roller and narrows in wedge shape at the upper end, of the partition lies against the sh ll surface of the ink ductor roller and is loaded by a spring force.

A compression spring for the loading of the partition member in the direction of the roller can be mounted in a bore which is arranged in a surface provided in an acute angle corner portion of the partition member. The spring in that case can bear by way of a bearing bush against a bearing strip of the ink-well. An acute angle α is defined betw en the base of the groove and the partition member bas surface, which surface bears along a transverse lin merely on the upper end of the base of the groove.

Advantageously, the loose arrangement of th partition member, determined by the three displaceable bearing points of spring, bearing surface at th circumference of the ductor roll r and line contact on th groov base, allow the partition to be freely movable in all directions as requir d, i. . it can adapt by way of self-adjustment to mov ments of th ink ductor r ller, with ut the bearing surface lifting off the roller circumference, in any phase of the running of the roller, however non-circular this running may b . This feature, in conjunction with the provision in

the bearing surface of a groov -shaped recess starting at its lower end and ending shortly before its narrowed portion, enables an ink-tight sealing without additional sealing materials between the bearing surface and the roller circumference. The sealing behaviour of the bearing surface does not reduce but rather increases through the mutual contact of the roller circumferential surface and the partition member bearing surface, i.e. as wear arises. In use, a build-up pressure arises at the contact point of the two surfaces due to the ink on the roller circumference, which build-up pressure, in spite of the sealing behaviour, can allow ink to penetrate to a small degree between the contact surfaces. In this case, the small amount of ink which does penetrate can travel only as far as the groove-shaped recess, the build-up pressure ending there, and it is then conveyed away within the recess. The bearing surface of the partition member is narrowed in wedge shape upwardly in direction of the ink film running towards it. This separating wedge has the effect that ink layers approaching each other at the ink-free strip of the roller circumference are stripped back to provide the required layer spacing. If a small amount of ink nevertheless gets under the bearing surface, then it is removed in the groove-shaped recess as already mentioned.

The partition member bearing in a groove in the base plate is preferably laterally guided at two opposite sides by two ductor blades disposed tightly thereagainst, wherein the groove is wider than the thickness of the partition member. A particular advantage, which becomes effective through the divided ductor blade lying against both sides of the partition member, resides in the fact that each portion of the ductor blade can be set freely and zonally to the ink gap desired between it and the roller. The end face bearing surfaces of the ductor blades at both sides always remain closely against the partition member, irrespective of any curvature they may be constrained to adopt by setting means, without resetting their position in any manner. If ink penetrates between these bearing surfaces and the partition member, then this ink is taken up and conducted away by the groove in the base plate. The use of additional sealing materials in not required.

An embodiment of the present invention will now be more particularly described by way of example with reference to the accompanying drawings in which:

Figure 1 is a sectional side elevation, along the line A-A of Figure 2, of part of inking means embodying the invention;

Figure 2 is a partly sectioned plan view of the inking m ans;

Figure 3 is a cross-section on th lin C-C f Figure 1; and

Figure 4 is a cr ss-section on the lin B-B of Figure 1.

Referring now to the drawings, th re is shown part of inking means of a rotary printing machin for printing with two printing plates, the inking means comprising an ink ductor roller 3 and a wedge-shap d ink-well 1 adjoining the r ll r. Arrang d in the ink-well 1 is a partiti n 2 having a curv d b aring surface 4, which corresponds to the circumferential surface of roller 3 and is urged thereagainst by a compression spring 5. The spring 5 is arrang d in a bore 6 and bears by way of a bearing bush 7 against a bearing strip 8 of the ink-well. Disposed at the bas of the ink-well is a base plate 9 provided with a groove 10, which is wider than the partition 2. The partition 2 bears at its upper end, by transverse line contact, on the groove base 12, and the base surface 11 of the partition includes an acute angle α with th groove base.

The bearing surface 4 is provided with a narrowed portion 14 at its upper end and with a groove-shaped recess 13. Ductor blades 15 and 16 are fasten d on the base plate 9 at both sides of the partition 2. For resetting of the ink gap, setting means 17 are arranged at the ductor blades 15 and 16.

In the operational state, ink is taken up out of the two compartments, formed by the partition 2, of the ink-well 1 by the portions of the rollers which correspond to the width of the respectively ass ci-ated printing plates of the machine and which are aligned with the ink-well compartments. An ink-fre strip, of the thickness of the partition is left on the roller circumference. The ink gaps and thus the thicknesses of the ink layers are determined by the setting of the ductor blades 15 and 16, which on resetting move along the side surfaces of the partition 2 without influencing its setting and the ink density condition. Any ink that has seeped in is collected and conducted away by the groove 10.

The bearing surface 4 of the partition 2 is pressed, loaded by a component of the spring 5, against the circumference of the ink ductor roller 3.

The partition 2 rests by its own weight on th upper part of the groove 10 and also by the bearing surface 14, narrowed in wedge shape, on th circumference of the ink ductor roller 3, wh r in this support of the roller is maintained irrespective of the angular setting of the ductor roller.

The constant support is reinforced through the friction of the circumferential surface of the r ller rotating against the narrowed portion of th surfac 14, so that ink layers approaching each other on the separating strip of the roller 3 are stripped back to their original spacing. If ink nevertheless g ts bel w the bearing surfaces 4, it is conducted away in the recess 13.

The partition in the inking means of the d scrib d embodiment has a good sealing and setting behaviour and its surface lying against the ink ductor roller enables an ink-tight adaptation to th roll r circumference even in the case of adjustment of th ink-well and is not susceptible to errors in th circularity of th circumf r nce. Zonal ink gap resetting by way of the duct r blad does not ffect any displacem nt of th partition. Th use of conv ntional sealing materials, which as a rule become encrusted and mbrittled in a short tim , can largely be avoid d.

CLAIMS

1. Inking m ans for a printing machine, comprising an ink ductor roller, an ink w ll which adjoins the

roller and the base of which slopes down towards the roller and is provided with a channel extending in a direction perpendicular to the roller axis, a movable well partition member arranged in the channel to be in sliding contact with the base of the channel at and only at an upper end thereof and provided with a curved bearing surface corresponding in curvature to and resiliently urged against the roller circumference, and a respective ductor blade guiding the partition member at each of two opposite sides thereof, the curved bearing surface having an upper end portion narrowing in wedge shape and a recess extending from a lower end of the surface to a region adjacent to said upper end portion.

2. Inking means as claimed in claim 1, wherein the recess progressively reduces in depth in direction from the lower end of the bearing surface to said region of the bearing surface.

3. Inking means as claimed in either claim 1 or claim 2, wherein the base of the channel and the base of partition member include an acute angle therebetween.

4. Inking means as claimed in any one of the preceding claims, wherein the width of the channel is greater than the thickness of the partition member.

5. Inking means as claimed in any one of the preceding claims, wherein the partition member is provided in a corner portion thereof remote from the roller with a bore receiving a compression spring which acts against wall means of the well to provide a force urging the curved bearing surface against the roller circumference.

6. Inking means as claimed in claim 5, the spring being arranged to act on the wall means by way of a bearing bush.

7. Inking means substantially as hereinbefore described with reference to the accompanying drawings.

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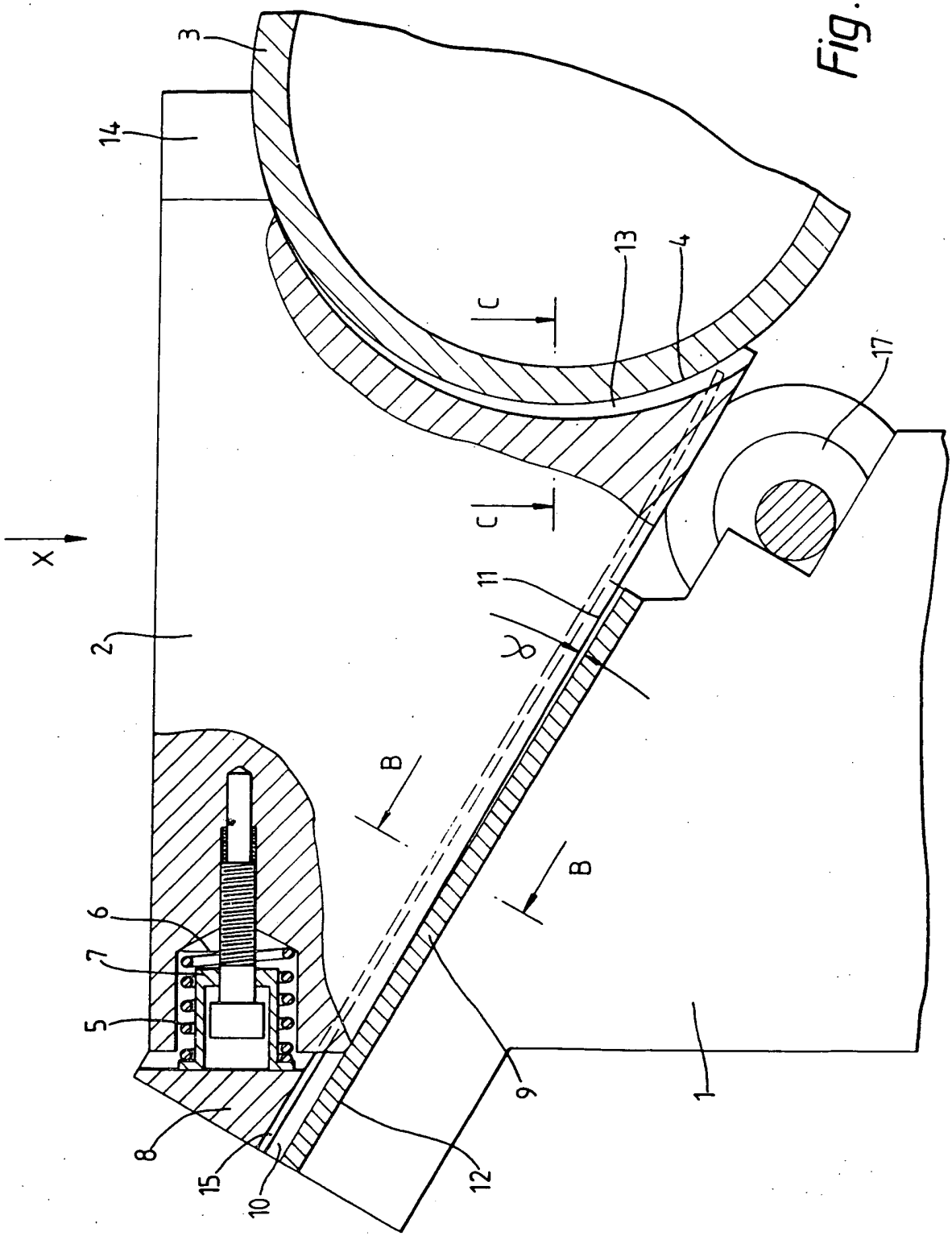

Fig.1.

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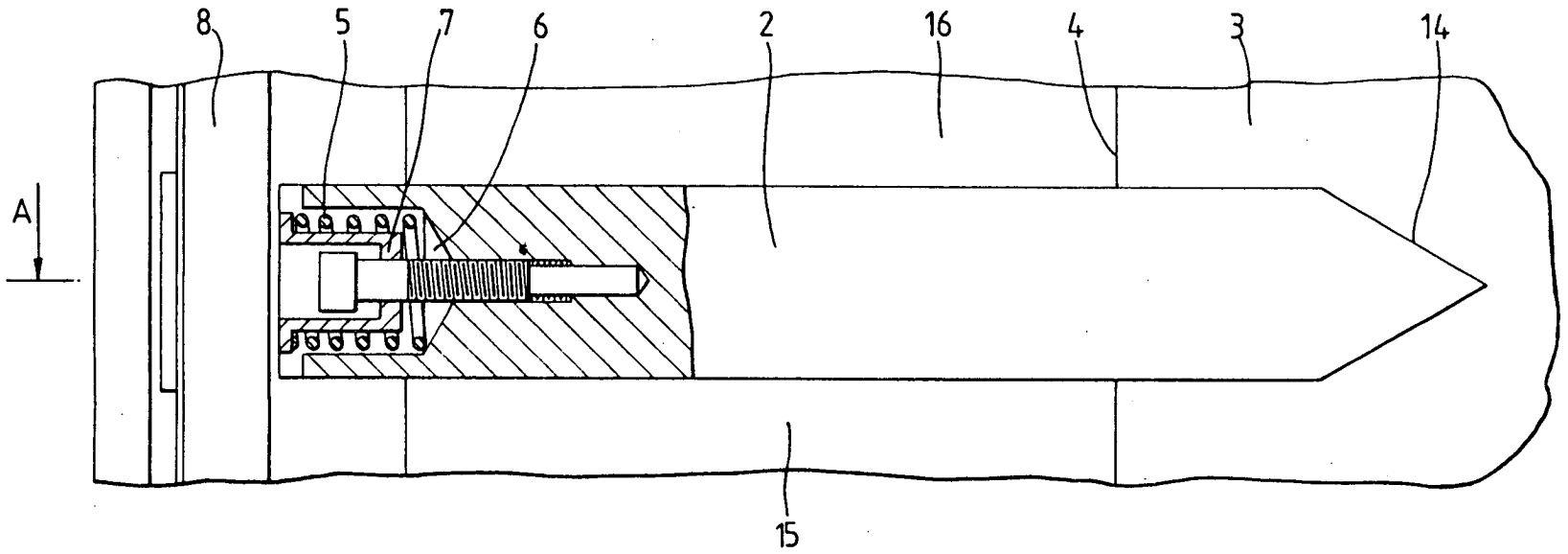

Fig.2.

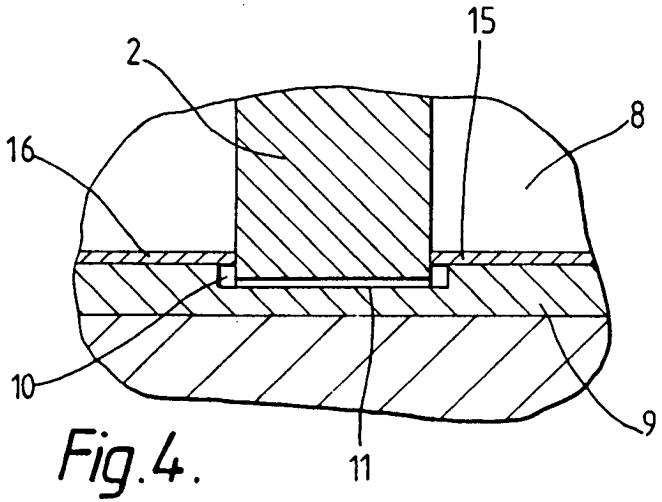

Fig.4.

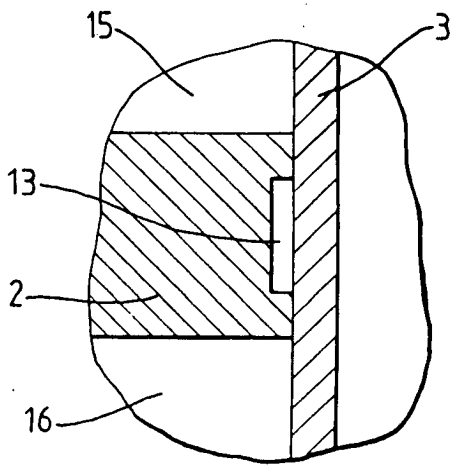

Fig.3.